

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-27 (canceled)

Claim 28 (currently amended): An apparatus for electrolyzing water for the production of hydrogen, oxygen and heat, which comprises:

(i) an electrochemical cell having an isotopic hydrogen storage cathode, an electrically conductive anode and a compartment for holding an ionically conducting electrolyte comprising water, and

(ii) a pulsed power supply for said electrochemical cell comprising means for generating a repeating sequence of voltages across said anode and said cathode, each said sequence including a first cell voltage regime consisting of a voltage sufficient to enhance cathodic absorption of hydrogen and a second voltage regime consisting of at least one voltage pulse which is at least two ~~time~~ times the voltage of the first cell voltage regime in magnitude with a duration no greater than 0.10 seconds.

Claim 29 (previously presented): The apparatus of Claim 28 wherein said voltage of said first cell voltage regime generated by said pulsed power supply ranges from about 1 to about 10 volts, and the voltage pulse of said second cell voltage regime ranges from 2 to 1000 times the voltage of said first cell voltage regime, and the total duration of said second voltage pulse ranges from about 0.5 nanoseconds to about 0.10 seconds.

Claim 30 (previously presented): The apparatus of Claim 28 wherein said pulsed power supply is operatively arranged to dovetail said second cell voltage regime onto said first cell voltage regime.

Claims 31-32 (canceled)

Claim 33 (previously presented): The apparatus of Claim 28, wherein said pulsed power supply is operatively arranged to superimpose said second cell voltage regime onto said first cell voltage regime.

Claim 34 (previously presented): The apparatus of Claim 29, wherein said pulsed power supply is operatively arranged to dovetail said second cell voltage regime onto said first cell voltage regime.

Claim 35 (previously presented): The apparatus of Claim 29, wherein said pulsed power supply is operatively arranged to superimpose said second cell voltage regime onto said first cell voltage regime.

Claim 36 (previously presented): The apparatus of Claim 28, wherein each said sequence of said pulsed power supply further includes a positive voltage sufficient for cleaning said anode.

Claim 37 (previously presented): The apparatus of Claim 28, wherein each said sequence of said pulsed power supply further includes a positive voltage sufficient for cleaning said cathode.

Claim 38 (previously presented): The apparatus of Claim 28, wherein said pulsed power supply is operatively arranged to re-equilibrate the cathode in a region of zero potential.

Claim 39 (previously presented): The apparatus of Claim 29, wherein said pulsed power supply is operatively arranged to re-equilibrate the cathode in a region of zero potential.

Claim 40 (previously presented): The apparatus of Claim 36, wherein said pulsed power supply is operatively arranged to apply a negative potential for further cathodic absorption of hydrogen.

Claim 41 (previously presented): The apparatus of Claim 37, wherein said pulsed power supply is operatively arranged to apply a negative potential for further cathodic absorption of hydrogen.

Claim 42 (currently amended): An apparatus for electrolyzing water for the production of hydrogen, oxygen and heat, which comprises:

- (i) an electrochemical cell having an isotopic hydrogen storage cathode, an electrically conductive anode and a compartment for holding an ionically conducting electrolyte comprising water, and

- (ii) a pulsed power supply for said electrochemical cell comprising:

- a ~~triple~~ quadruple power supply having a first low voltage direct current supply, a second low voltage direct current supply, a third low voltage direct current supply and a fourth high voltage direct current supply;

- an oscillator coupled to and powered by said second low voltage direct current supply, operatively arranged to provide a train of timing pulses;

- a binary counter operatively arranged to receive said timing pulses from said oscillator;

- a decoder coupled to said binary counter and operatively arranged to count said timing pulses; and,

- a current generator coupled to and controlled by said decoder, said current generator operatively arranged to provide oscillating pulsed potentials to said anode and said cathode.

Claim 43 (previously presented): The apparatus of Claim 42 wherein said oscillating pulsed potentials comprise a repeating sequence of voltages, each said sequence including a first cell

voltage regime consisting of a voltage sufficient to enhance cathodic absorption of hydrogen and a second voltage regime consisting of at least one voltage pulse which is at least two time the voltage of the first cell voltage regime in magnitude with a duration no greater than 0.10 seconds.

Claim 44 (previously presented): The apparatus of Claim 43 wherein the voltage of said first cell voltage regime ranges from about 1 to about 10 volts, and the voltage pulse of said second cell voltage regime ranges from 2 to 1000 times the voltage of said first cell voltage regime, and the total duration of said second voltage pulse ranges from about 0.5 nanoseconds to about 0.10 seconds.

Claim 45 (previously presented): The apparatus of Claim 42 wherein said anode and cathode are connected via electronic switching circuitry to all four of said power supplies in order that oscillating potentials of varying polarity may be impressed across said anode and cathode over time.

Claim 46 (previously presented): The apparatus of Claim 42 wherein said first low voltage direct current power supply is a 12 Volt power supply.

Claim 47 (previously presented): The apparatus of Claim 42 wherein the second low voltage direct current power supply is a 12 Volt power supply.

Claim 48 (currently amended): The apparatus of Claim 42 wherein the ~~third~~ fourth high voltage direct current power supply is a 1000 Volt power supply.